





Arremonops, Mar 20, 1958, II

(2)

Most of these birds appear to be mated, and it is significant therefore, that singing is very rare. Certainly none of the mated birds seem to sing when the ♀ is nearby.

I can add 2 new patterns to the repertoire of the species.

One is series of "Whaa whaa whaa ..." or "Waaah waaah waaah ..." Notes, which is, I think, a form of "HAC" or Wh Notes. I shall call this HAC for the time being at least. The notes are both thin and nasal. Sometimes, perhaps usually,

uttered comme ça — — — I first heard this yesterday, when there seemed to be a fight in the shrubbery somewhere. (One of the birds then flew out of a bush and landed on the ground and uttered "chuck" Notes — see below). I have since heard it quite a number of times in various circumstances (usually when it was quite impossible to see the birds themselves).

It is apparently given when (ever?) one bird of a mated pair joins another — without actual fighting or "chuck Notes" in some cases — although it may follow "chuck Notes" when

latter are apparently used to bring the members of a pair together — see below. I would have said that this "HAC" was definitely hostile, probably aggressive, but this association with "greetings" between mates should make me a little cautious). I have also heard both birds of a mated pair give this HAC as an apparent response to HAC by a third bird a few yards away.

The "chuck" Notes (chk) are even more difficult to understand. As mentioned above, I first heard them uttered by a bird after an apparent fight. The bird landed on the ground and



Anemoneps, Mar. 20, 1958, III

(3)

stood in a posture <sup>as</sup> during their chick's. This posture itself would suggest alarm, but I think that it was probably just simple flight int. mov. — and certainly the birds do not give chick's when they fly off alarmed by me.



I have also heard chick's, apparently exactly the same chick's, given as a means of bringing mated birds together. I.E. one bird will start uttering chick's and the second will start answering. Each bird gives one chick N, the other responds by a single chick N, the first gives another single note, the second gives another single note, etc. etc. Sometimes this alternation is quite regular, sometimes irregular. One often hears that one of the calling birds is moving slowly through the underbrush toward the other, or that they are both moving toward one another.

Anemoneps, I

March 21, 1958

K-6

Arrived a little earlier today, just at dawn, and heard a lot of "singing". But all by unmated birds or mated birds separated from their mates, as usual. I was more & more impressed with the unmistakable fact that their songs are really nothing more than bursts of accelerated CN's. I.E. they are really comparable to the R's, rather than the WS's, of the tanagers. I think I shall call them R's also.

There was another burst of HAC when a third bird came too close to the members of a pair.



Arremonops, I.

(4)

April 7, 1958  
Frijoles

A pair of these birds around in the neighborhood, not doing much, but I did notice a few things.

The "HAC" Notes can't be very aggressive. Both birds of the pair gave these notes whenever one focused the other. Given in flight by a landing bird. Given by the bird on the ground toward the landing bird. Given by both birds on ground after one has landed. On the ground, given from an apparently unritualized more or less erect posture (less extreme than the one shown on Mar. 20, p. 3). This vocal pattern might better be called HCN.

Neither of the birds ever gave "Chuck" Notes when flying away from me.

One of the birds gave a rather plaintive sounding "Whew" Note when it became separated from its mate. "Calling in" the mate? I think so. (This note may have been quite closely related to the "Whit" Notes which introduce the "song".)

Arremonops, I

April 12, 1958  
Barro Colorado

I caught one of these birds in my net near C-21 on Apr. 9, and let it loose in the large aviary Apr. 10.

When I pulled it up in the net, it uttered H&C Notes, more or less like those of tanagers, although rather weaker than those of a tanager of comparable size. (These H&C Notes were



Arremonops, Apr 12, 1958, II

(5)

rather similar to the "HAC" Notes, but rather different in rhythm. More "urgent" sounding, in a less organized rhythm, and probably less nasal sounding.)

When I let the bird loose in the aviary, it scuttled into the ground vegetation, and it has just begun to emerge (still for very brief periods) today.

Arremonops, I

April 19, 1958

Barro Colorado

The capture bird has only begun to emerge a little during the last few days, and it is still only coming out for very short periods at rather rare intervals. This is certainly the most "thicket-loving" of all the species I am studying.

I might mention that it seems to have WF's and TT's of the "typical" thraupine or emberizine type.

Arremonops, I

July 4th, 1958  
Pedro Miguel Lalue

I have just caught another Green-back. Obviously a member of a pair which has been hanging about the area for a long time. I then put it in a small cage right beside the net. It's mate has made no attempt to join it; and, perhaps more surprising, neither bird has called the other. This "lack of behavior" also occurred when I caught other Green-backs earlier, and it seems to be characteristic of the species as a whole. This may be correlated with the fact that the species is almost completely non-gregarious.



Memoranda, July 4, 1958, II

②

I watched an obviously hostile chase, with a vigorous aerial ruffle, involving 2 birds. Accompanied by lots of very harsh HAC Notes. These were probably harsher than most HAC Notes given when one bird of a pair joins the other. So it may be better to restrict the term "HAC" to the very harsh notes, and call the "greeting" HAC's "GHAC". But there is still no reason to doubt that the GHAC's contain a strong hostile element.

Memoranda, I

July 16, 1958,  
Barro Colorado

There has been a pair of wild Green-backed Sparrows around the aviary in which my captive birds are for about 3 days ago. Obviously mates.

Constantly flying to the aviary, together, landing, then flying off to another nearby perch, then to a second, then back to the first, then to a third, etc. etc. etc. Almost always flying together, although one bird may be definitely in the lead.

Whenever they land together, or one bird joins another, there is always a burst of GHAC Notes. Some of these may have been directed toward the captive birds, but I think that most of them were at least solicited by the wild birds upon each other.

As proof of the hostile nature of GHAC Notes, I should mention that one of the wild mates (the ♂?) followed a burst of GHAC by pecking at his mate!!

None of these birds have shown any trace of the R "song".



Aneides, July 14, 1958, II

(17)

Which may be taken as an indication that the R of this species is probably not hostile.

The only other call the visitors have given is the 2-syllable "Whit-Chu" described on March 11, p. 1. One (at least) of the visitors (the ♂?) has done quite a lot of this. Which might be taken to indicate that the "Whit-Chu" is more aggressive than the R.

One of the visitors has several times, apparently at random in the midst of his other behavior, suddenly done some fantastically fast tail-quivering (TQu) of some sort. So fast that it is just a blur - I can't tell if it is vertical or horizontal or both. Accompanied by jarring. (This species fans its tail a lot anyhow.) So spectacular that I suspect it must have some sort of social significance.

Aneides, I

August 24, 1958  
Cerro Campana

These birds seem to be common in the scrub and forests at all levels of the mountain.

I flushed an apparent pair from the ground at the edge of an isolated copse. They behaved rather as if they had a nest, hopping back and forth nervously near me, apparently reluctant to leave the neighborhood - although I couldn't actually find the nest. One bird was quite vocal, uttering two types of notes - and lots of them. Single chk's, and much weaker, thinner single "Tsip".



Anemonops, Aug 24, 1958, I

(8)

Notes. I think that the latter must have been produced by a relatively stronger escape component than the former. The bird tended to give "Tup"s while moving away from me and "Chucks" while moving toward me.

Anemonops, I

September 8, 1958  
Barro Colorado

I got another Green-back from Peregrina yesterday, and let it in the cage with the others. They both attacked it vigorously, at first, at different times.

Some of these attacks were preceded or accompanied by G by the attacker.

Finally, the new bird quit sat on a branch, in a more or less hunched posture, with head quite far down, slanting diagonally, and bill opening from time to time in a pronounced G, and let one of the old birds peck it again on the back.

All this hostility quite silent! Not a sound uttered at any time by any of the three birds.

Anemon, I

July 7, 1959  
Frijoles

I have been making a few casual observations of Green-backed Sparrows here from time to time, in the intervals of observing other species. Nothing very much new.



Memoranda, July 7, 1959, I.

(9)

Watching some apparently single birds, probably ♂'s separated from their mates, singing in the early morning. One male, at least, gave sort of an abbreviated song, a few introductory notes followed by a few notes which were probably an abbreviated "intention movement" of the complete song, repeated, before "warming up" enough to give a complete song. Such abbreviated performances might be represented by the following diagram: —

Some ♂'s also gave mixed "jumbles" of a few notes, more or less random arrangements of high and low notes, in the early morning before warming up.

All this is quite reminiscent of the Saltators (see today's notes on Saltator)

Memoranda, I

April 18, 1960  
Barro Colorado

One of the captive birds I have had a long time (mixed White) has been alone in its cage for several months. But this morning we discovered that she had built a nest and laid an egg already. So we hurriedly tried to provide a mate.

I put 2 new birds in White's cage: one mixed Green, and the other mixed Lavender. Lavender did nothing during the first couple of hours after being put in the cage; so I took it out.

Green and White reacted madly to one another, however.

Their reactions to one another can be briefly summarized as follows. White began soliciting immediately, as soon as Green & Lavender were introduced. Green responded immediately by "pouncing" and/or performing a sup-



Memoranda, Apr. 18, 1960, II

10

Cantering attack on White. White always escaped immediately, and sometimes waited a few seconds before resuming soliciting. Sometimes Green followed White immediately after pouncing upon her or supplanting her - sometimes not. In any case, White always resumed soliciting (at first) within at least a few seconds; Green responded by pouncing upon or supplanting her again, etc. etc. etc. They continued like this, with hardly a break, for at least an hour. Then they gradually began to relax. White performed fewer and fewer bouts of soliciting, and Green began to supplant her less and less frequently (and less and less vigorously). Eventually both birds were spending most of their time feeding and sitting. Whereupon I left.

This performance was accompanied by several different kinds of display, in addition to soliciting. The most common additional forms of display were GHAC's and ChK's. Both were very common during the first few minutes after Green was introduced.

Most of the GHAC's were uttered by Green, I think. During the period after he was first introduced, he uttered them whenever he landed by himself as well as whenever he landed beside White. These initial GHAC's were always loud & vigorous. I am fairly certain that White also uttered GHAC's quite frequently in the same circumstances at the same time. Once (at least) White uttered a typical burst of GHAC's when she landed by herself after escaping from Green! Later on, when the birds appeared to have become a little more habituated to one another, the frequency of their GHAC's declined somewhat; but they were still not uncommon when I left.

The GHAC performances were slightly variable in form this afternoon. I think that the basic, single GHAC Note might be transcribed by something like "Whā-āuh". A definite trace of bisyllabic division. I think that



Acemouops, Apr. 18, 1960, III

(11)

Almost all bursts of GHAC consisted at least 3 or 4 of these typical notes. Some bursts may have consisted of 2 or 3. Some of the bursts of GHAC this afternoon were apparently composed of typical GHAC & the above. Others were preceded by "introductory" notes. Sometimes a bird uttered a single "Whooooot" note just before a series of typical GHAC notes. (The possible significance of "Whooooot" notes is discussed in more detail below.) These "Whooooot" - GHAC performances reminded me somewhat of the See Note - HAC performances of Fork-capped Saltators (see my notes on Saltator, Apr. 12, 1960, p. 31). At other times, a bird uttered a series of very brief & rapid notes just before a series of GHAC notes.

These brief & rapid initial notes are difficult to describe. Sounded quite like the ordinary CN's of many other species, but not particularly like any CN's of this species I have heard. Quite soft. A single one of these short introductory notes might possibly be transcribed by something like "Tik" or "Tuk" - but I am quite uncertain about this.

I could not determine what were the causal differences (if any) between these different types of GHAC performances.

The ChK Notes usually occurred when White was escaping from Green. I think they were usually uttered by White. This suggested that they may be alarm reactions or, at least, produced when the escape drive is slightly stronger than the attack drive.

As far as I could tell, neither the GHAC Notes nor the ChK Notes during these reactions were accompanied by any special ritualized postures or movements. There was certainly no trace of either CR or "song" (what I called "R" above) at any time this afternoon.

Before I forget, I should mention that the ChK Notes stopped fairly early this afternoon - long before the GHAC Notes. This would sug-



est that the Ch.K. is a higher intensity pattern than the G.H.C., as well as being less aggressive.

By far the most elaborate pattern this afternoon was the soliciting by White. Essentially, an extreme development of the soliciting pattern of related species.

The "basic" element of soliciting was an extreme ft posture, with extreme fluffing of the breast and belly plumage, and extreme raising of the tail. This was usually (but not always) accompanied by Q and soft "Whoooo" Notes. These "Whoooo" Notes were very soft and plaintive (very much softer and quite unlike the "Whooooot" Notes mentioned above & discussed below). Always uttered in long series, one right after the other.

I shall call these notes "Wh" Notes. There was obviously no definite "fixed" or typical number of Wh Notes to a series. White just continued uttering Wh Notes as long as she continued soliciting (in certain circumstances - see below), and the length of time she spent soliciting was extremely variable. The bill was kept slightly open throughout a whole series of Wh Notes, without any tendency to close between successive notes. The loudness of the Wh Notes was slightly variable, within fairly narrow limits. They seemed to be loudest when soliciting was most intense. The bill was spread slightly wider when the notes were relatively loud than when they were relatively soft.

Actually, White seemed to have 2 slightly different types of soliciting patterns this afternoon. She usually began when Green was not too close to her. In such circumstances, her head and bill were lifted relatively high (see accompanying drawing) while her tail was not lifted very high. In such circumstances, she also performed extreme Q and uttered Wh Notes. If the ♂ approached her while she was soliciting in this manner, she



Ammonops, Apr. 18, 1900, V.

(13)

### Feeding Postures

I am not sure if the bill remains open  
after 5th's stop

Base of lower mandible  
is white-ish or silvery

White throat quite  
prominent in both postures

Gray Crown movable in both  
postures



Notice  
back of head  
shape.

Extreme Posture  
when  $\sigma$  is close



Notice  
Oreast

Tail apparently  
never spread or fanned.

Sometimes the tail is almost horizont-  
al in this posture.

Less Extreme Posture (+  $\sigma$ )  
when  $\sigma$  is not close.



Chlorophaps, Apr. 18, 1960, II

(14)

frequently raised her tail higher (as in drawing on preceding page), which necessitated lowering the head a little and pulling the breast in (the head was sometimes lowered even further, i.e. pointed diagonally forward more, than in the drawing on the preceding page). At the same time she frequently stopped Q (leaving the wings resting on back) and Wh Notes!

(It is possible that she sometimes stopped Q without stopping Wh Notes, and/or sometimes stopped Wh Notes without stopping Q, but such cases were at least relatively rare. Q & Wh were always or almost always very well correlated and stopped together.)

White may have stopped the Q and Wh when the ♂ approached her because she was afraid of him. She certainly had cause to be! Possibly in the case of a better acquainted or adjusted pair the ♀ would have continued Q and Wh until (and possibly after) the ♂ had mounted.

As far as I could see, Green never did mount White (or mount her for more than a brief period during some "pounces") this afternoon.

The only other displays I observed this afternoon were a few single "Whewoot" Notes (like the ones preceding some CHAC Notes). Usually or always uttered by White - I think. Some time after Green had been introduced, when the birds were beginning to calm down a little. Usually or always uttered when White was some distance away from Green - I think. Not accompanied by any special movements or postures. These "Whewoot"s may have been the same thing as the "Whewoo" Note mentioned above on April 7, 1958, p. 4. They may also have been attempts to "call in" the mate. (I might also add that these "Whewoots" were slightly reminiscent, in sound, of the double-note "Whit-chu"s which usually precede the full song of the species.)

When Green did not respond to White's soliciting in any way (after they had been together for quite some while) she would just stop eventually.



Announcements, Apr 18 1960, VI

(15)

without any further display. This relaxation was usually followed immediately by one or two G.W. movements — which may well have been quite ordinary comfort movements.

Announcements, I

April 20, 1960  
Barro Colorado

I watched Green and White again for a couple of hours this morning. They seem to have settled down quite nicely together, but their behavior has become relatively uninteresting. White seems to have quite stopped soliciting (she spent some time this morning incubating her infertile egg — so I threw it out). Green has almost or completely stopped supplanting and/or "pouncing".

Several times this morning, when Green was by himself, he uttered wide long "Whooooot" Notes just like the ones I heard on Apr. 18. (I shall call these "WW"). Further confirmation that these notes are used to "call in" the mate.

He also uttered a few slightly different notes in similar circumstances. Always single also. A note of this type might be transcribed by something like "Tseeeeeeeet" (I shall call such notes "TWW"). I think that the TWW may be nothing more than a "variation" (higher intensity ???) of the WW. Possibly also used to call in the mate.

Actually, Green uttered more TWW's than WW's this morning. This might perhaps indicate that he is highly motivated.

The TWW is even more like the See Notes of the Black-capped Saltator than is the WW.

(I did not hear White utter either TWW's or WW's this morning.)



Memoranda, Apr. 20, 1960 II

(16)

so possibly my identification of the bird that uttered WH on April 18 was wrong.)

There was quite a lot of GHAC-ing this morning, certainly less frequent and possibly less loud than on April 18th. Green occasionally uttered GHAC's when he landed on a branch by himself; but he usually uttered these notes when he landed near the ♀. Most, but by no means all, of these GHAC's were moderately loud and not preceded by other special introductory notes.

Occasionally Green uttered a series of notes which were very much like ordinary GHAC's, but much softer. Might perhaps be transcribed by something like "Wah wah wah wah..." (I shall call such notes "MHAC") As the preceding transcription would indicate, individual MHAC Notes are not Crissalike like all or most GHAC Notes, and they are also shorter than all or most GHAC's. MHAC's were much rarer than GHAC's this morning, but seemed to occur in somewhat similar situations. I think that Green uttered all his MHAC's when landing near the ♀, particularly when she was on or near the nest. It seems likely that all the MHAC's are either low-intensity GHAC's and/or intermediate between typical GHAC's and "MCN's" (see below). I never heard a burst of MHAC preceded by any special introductory note(s).

Another distinctive call which Green uttered several times this morning was a series of soft, very short, notes which I find almost impossible to transcribe adequately. They might, however, be very crudely rendered as "Tik tik tik tik..." I think there were usually 3 or 4 such notes in a single series. (I shall call such notes "MCN's"). I think they are the same thing which I heard before preceding GHAC's (see Apr. 18, 1960, p. 11); but Green uttered his series of MCN's without any following GHAC Notes this morning. Again, he uttered his M-



Arremonops, Apr 20, 1960, III

(117)

CN's when landing (and sometimes, perhaps, when flying from perch to perch) near the ♀ when she was near the nest.

A couple of times this morning, when the ♂ was flying or landing near the ♀ when she was on or near the nest, he uttered a series of brief soft notes which were almost "working" in effect. I was not able to analyze these peculiar performances, but I think that they may have been largely or completely absent series of MHAC and/or MCN Notes.

None of the MHAC, MCN, or "working" performances were accompanied by special ritualized postures or movements.

I watched another pair of Green Cackles near Frijoles yesterday. They were sitting side by side facing left in a bush. Most of the time they were both preening, but every once in a while one bird (usually the ♀) would hop over the other, or, at least, hop to a nearby twig and back again. Every time one of the birds would make a vigorous movement of this type, both birds would utter a burst of GHAC — in spite of the fact that they were never more than a few inches apart at any time. This was quite reminiscent of Taltator coerulescens.

I also noticed that both birds kept their bills moderately well open, without a trace of closing between successive notes, throughout each burst of GHAC's.

Arremonops, I

April 21, 1960  
Frijoles

Watching the same pair of Green Cackles (let us call them "A") as described immediately above. One bird of the pair (at least) frequently uttered single TWW's when separated from its mate. I saw again & again that such notes were seldom followed immediately by flight.



While the A birds were feeding on the ground, one bird performed a vigorous burst of vertical tail-quivering (possibly the same thing I called "T Qu" on July 16, 1958, p. 7) just after landing after a long hop in flight. Quite thrush-like looking.

Ammerops, I

March 24, 1961  
Barro Colorado

I saw what seemed to be a boundary dispute between 2 pairs of wild Green-backs around 8:00 a.m. this morning.

The 2 pairs hopped and flew through a long series of bushes and shrubs (extending over at least 500 feet). More or less parallel. Never came within more than a couple of feet of one another.

Their displays or lack of displays were interesting.

None of the birds appeared to direct any displays toward birds of the other pair. But both birds of each pair uttered many, many GHAC's among themselves. These GHAC's sounded quite ordinary. Usually accompanied by the posture drawn here. But they were uttered even more frequently than when a pair is moving through the shrubbery by itself.



All or most of these GHAC's seemed to be at least partly directed. Comparable to a "triumph ceremony".

Interestingly enough, there was absolutely no trace of song during this encounter. Nor any special ritualized postures or movements. Certainly no st



March 23, 1961  
Barro Colorado

I just realized that one of the places I have been seeing around the clearing quite frequently (one of the places I visited in the boundary dispute described above in yesterday's notes) are old Green & White T

I watched them again very briefly this morning

When flying from one tree to another, the leading bird of the pair uttered long whistle-like notes. Obviously what I called WW of me. I think that most of the WW's I heard today might be transcribed by something like "Tweeewout."

It is obvious, I think, that the WW's and TWW's of these species are homologous (& presumably analogous) with the SN's of the Blue, Palm, and Plain-colored Tanager, and the PN's of Sangre de Toros.

In the case of the incident described above, when Green and White were flying and one bird uttered WW's in flight, both birds uttered GHAC's, as usual, as soon as they landed (together).

Later on, one of these birds uttered WH's when perched a few feet away from its mate.

Меленков, И

March 24, 1961  
Barro Colorado

I saw a really violent dispute among 3 Green-backs today. One bird chasing another, through the air, followed by a third bird (probably the mate of the more aggressive of the other two birds). The aggressive chasing bird occasionally caught up with the fleeing bird and pecked it, but the fleeing bird always got away immediately, and the chase was re-



used. All this behavior was accompanied by very constant HAC (louder, harsher, and more irregular than typical GHAC) and many single loud "Chauk" Notes. These "Chauk" Notes were both nasal and metallic. I suppose that these "Chauk" Notes are closely related to the "Chauk" Notes I have heard uttered by this species before, but they were undoubtedly distinctive. Sounded as if they might be very high intensity. I think, but cannot be sure, that the pursuing bird uttered some of the "Chauk"s. I am almost certain that the aggressive chasing bird uttered at least some of the HAC.

After a few seconds, the fleeing bird and the aggressive chasing bird disappeared from sight. But the presumed mate of the latter remained behind, perched a few feet from me. There, it certainly uttered many "Chauk" Notes. At first very loud and rapidly repeated. Gradually becoming slightly softer (although still remaining nasal and metallic), and uttered at gradually longer intervals. Apparently "running down". Then this bird also flew away from sight.

I think that this bird which remained behind may have gone into a posture like the "High Bowing" Posture of Atlapetes assimilis (see notes on Atlapetes, May 30, 1960, p. 30), very briefly, when it first landed on the perch where it remained. If so, this posture was also accompanied by "Chauk" Notes.

I am fairly certain that the pursuing pair in this incident was composed of Green & White.

In any case, Green & White appeared (again) after a few seconds. One of them (presumably the ♂ — presumably Green) began to utter song immediately, in spite of the fact that its mate was present. This song was not complete. Approximately "Whit - clu whit - clu whit - clu clu clu clu". Interestingly enough, however, this was the



Memoranda, Mar. 27, 1961, III.

(21)

first Green back song I have heard in several days. Possibly a "triumph" performance??

Memoranda, I

May 30, 1961  
Frijoles

Have been watching birds near the RR station during the early morning, both yesterday and today.

This species is always or almost always the first of the local species to begin singing in the morning. Well before sunrise.

I have been paying special attention to the songs of this species. Especially one ♂, right across the tracks from the station. This ♂ (which I shall call "Z") begins to sing particularly early and continues to sing particularly vigorously until well after sunrise.

I have been surprised, these last 2 mornings, by how much of the early singing consists of the "Whit-chu"s, and related notes, (which I used to think was essentially "preliminary"), and how little consists of the "acelerando" (which I shall call "Acc" from now on).

The songs uttered by Z have been somewhat variable this morning. Comme ça:

"Whet chu Whet chu Whet Whet Whet Whet chu  
Whet Whet Whet chu Acc ('chu-chu-chu...')"

"Whet chu Chewa Chewa Chewa Chewa Chewa Chewa  
Acc ('chu-chu-chu...')"



"Whit Chu Whit Chu Whit Chu Whit Chu Whit Chu Whit  
Chu Acc ('Chu-chu-chu...')

Once this morning, the Z bird uttered an even more distinct series of notes, obviously a variation of the usual pattern.

"Whit Chee Chu Whit Chee Chu Whit Chee Chu  
Whit Chee Chu Acc ('Chu-chu-chu...')

These "Whit Chee Chu"s were

I am now sure that the "Whit" and "Whist" notes of these patterns are closely related to WW and TWW. I think I shall call them "SSN"s from now on. The "Chee" notes of the song transcribed immediately above were probably only slightly aberrant SN's.

The "Chwa" notes of some songs are probably only variations of the ordinary "Chu"s. Possibly tending slightly to SN's.

As far as I can tell, the Acc's are always composed of "Chu"s. The fact that this bird which sings so vigorously utters so relatively few Acc's, and so relatively many SSN's and other types of "Chu"s might suggest that songs with many of both the latter types of notes and few Accs are higher intensity than songs with many Accs and few SSN's or independent "Chu"s.

The occasional series of SSN's alone are, of course, particularly reminiscent of the high intensity dawn songs of the Sangre de Toros, Saltators, and the Yellow-throated Parula finch.

The series of "Whit-Chu"s are particularly reminiscent of the PCN-ACN performances of the Sangre de Toros and the "Kew-Krow" song.



s of the Hatched Saltator (see distance of 48, May 30, 1961, of my notes on Saltator).

Since we have been in the area of the Green Lizard, I have noted that either the Saltator or the Green Lizard is the bird that has been a subject of the Saltator at times. I think Z usually has a better relationship to the Saltator but not the Green Lizard.

Z usually sings from a rather high (10 feet off the ground) exposed perch. Higher and more exposed than any other bird of this species I have seen singing. Usually in pairs or small groups.



All the time Z sings, he is obviously visible. Even when he stops singing he appears briefly (as he sometimes does, even very early in the morning — presumably going to feed), I never hear any CHAC's coming from his area. His songs must be produced by frustration of pairing and/or sexual drive(s).

This seems to be equally true of all songs of all other birds of the



s species. I have never seen a bird sing when its mate was near. And I have never heard song denoting a purely hostile dispute.

When 2 female stop singing after sunrise, he usually, I think, stops completely. No brief recrudescence later in the morning. Why? Mate incubating?

Another bird, not so far from Z, sang slightly different songs this morning. Cow Z: "Whoo-ee chue - Whoo-ee chue Whoo-ee chue . . . ."

I spent much of the latter part of this morning watching 2 other pairs of Green backs. The ♀ of one pair ("X") was just working steadily almost all the time I watched. The 2 birds of the other pair ("Y") stayed together all the time. Presumably not incubating or even nest-building yet.

I first noticed the X pair when they were feeding together on the ground. Uttering usual GHAC's whenever they came close to one another. Then one of the 1 birds flew up and landed in a bush about 5 feet away from the X's. The X pair immediately reacted. All 3 birds silent. The third bird remained sitting in its bush for some moments. Then began to utter "Whit Chir"s (so this third bird was presumably the Y ♂). Then this third bird was joined by its mate, apparently in response to the "Whit Chir"s. Both Y's GHAC. Then they started to advance, hopping, toward the X's. The Y's repeatedly supplanted the X's. All 4 birds were silent throughout. But once one of the Y's hopped rapidly forward, toward the X's, in an unwritten, crouched posture with CR and extreme BF (breast- and belly-fluffing) with its wings held out from the body slightly (the whole wings - not just carpi). The X birds eventually left the area completely - temporarily.



Memoranda, May 30, 1961, V.

(25)

Around 8:15 I saw another tactical encounter between the X and Y pairs. The two pairs just happened to be in the same area. One bird of one pair came to its nest. The other bird of the other pair came to its nest. This seemed quite ordinary. But this was the first time I saw this during this period when the 2 pairs were fairly near one another than at any other time this morning. Possibly the members of the pairs were redirecting their hostility. (As was the increased frequency of CHAC's simply due to the fact that the members of the pairs came together more frequently when another pair was nearby than at other times ????)

Both the X and Y pairs uttered quite a lot of WW's and TWW's (I shall call these both "SN"s from now on) whenever they became separated from their mates and no other Green Backs were around in their vicinity.

The behavior of the X's during n.b. was interesting. As far as I could tell, only the ♀ built. When the ♀ brought n.m. to the nest site, the ♂ usually or always accompanied her, usually landing a few feet away from the nest (while the ♀ usually went on a little further and landed very close to the nest). Both birds quite silent when approaching the nest. Then the ♂ usually or always flew to one of several nearby bushes and sang while the ♀ went to the nest and did the actual building. Then, when the ♀ finished building, she either flew to the ♂ or he flew to her and the 2 birds then flew away together. Usually gone several minutes (the ♀ presumably collecting n.m.) before returning again.

Most of the ♂'s songs while the ♀ was n.b. reached the observer fairly rapidly. Relatively few repetitions of SSN's, "Chu"s, or "Whit du"s apart from Aes. The ♂ did not usually sing



Memoranda, May 30 1951, VI

(26)

were steadily throughout the periods when the ♀ was n.b., and I rather thought that his songs at such times were relatively low intensity. His SSN's were always "Hled"s.

His usual song postures at such times were more or less comme ça

No CR?



Head usually retracted. View of less elongated "break" in back. Tail more or less straight down.

I am not sure of the position of the wings, but I think they were usually more or less like this

The bill usually or always OCB with all notes of songs, including SSN's, "Chu"s, a etc.

I am not sure of the status of CR in connection with the song patterns of this species. I think that the X ♂ (and Z) did not usually have CR when they sang.

But once, at least, the X ♂ had definite CR when he accompanied the ♀ to the nest, and retained the CR after she left him and he went away and began to sing.

Once, when the ♀ finished n.b., she sat on a perch near the nest-site and uttered 1 SN. The ♂, who had been singing about 10-15 feet away, immediately flew to her, uttering 1 SN in flight. He landed right beside the ♀. Silent. The ♀ immediately hopped up



Monarchs, May 30, 1961, VII.

(217)

day. The ♂ then started for a few seconds with F + BF still silent. Another time the ♀ sang - 10:41 to the ♂ after n.b. Land ed quite close to him. The ♂ then sang with CF = BF performing frequent - 10:50 to 11:00 - 11:00 to 11:10 - 11:10 to 11:20 - then both birds flew away.

Sometimes, when the ♂ was waiting for the ♀ to finish n.b., he would utter quite a lot of Chk Notes instead of singing. Probably alarm. Seemed to be correlated with my movements.

Several times, when the Y birds were feeding more or less together, when the X birds were not close by, the two Y birds would utter slightly distinctive GHAC Notes "Whoaaa Whoaaa Whoaaa ...." These sounded as if they might be partly intermediate between typical GHAC's and SN's. Had something of the urgent quality of the latter. I think the Y birds uttered these notes when they came close together, but not too close!

Monarchs, I

May 31, 1961  
Driples

Back to X-Y area at dawn, 5:40 a.m.

A little song from a pair of both pairs, but not much. The ♂ of this pair seem to be singing much less than 2 yesterday and the day before.

X ♂ is not near the nest when he does sing now. I can't even see him.

Now, 5:55, neither pair visible or audible! Still not, at 6:10.

X's finally show up, 6:25 a.m. SN's and GHAC's as usual.



Observations, May 31, 1961, II

(28)

X starts to sing. What time is it? 2:15 - 2:30 p.m.  
The "What" is barely understandable.

Then both X's start to feed. (5:30 - 5:45 p.m. - 1st visit?)

♀ X back to nest with n.m. ♂ doesn't accompany her.  
starts to sing (with early A.S.?) when he left her.

♀ leaves nest, utters SN, flies to ♂, mutual GHAC. Both  
feed, near Y boundary.

1 Y flies up, lands in bush about 10 yards away. Utters  
GHAC as it lands by itself. Then goes away again.

Then Y joined by mate (♀). Mutual G. etc. I see that this  
Y ♀ is also carrying n.m. 6:35 a.m. !! ♀ Y flies away, presumably  
by taking n.m. to nest. ♂ Y remains behind, starts to sing. Then  
c or less as usual. Head rounded, but no real CR. Wings slightly  
drooped, insofar as they do not meet over base of tail.

All 4 birds gone again in a few minutes (although I can still  
see the Y's in distance). Not back by 6:45.

There is no doubt but that the birds are far less active today  
than yesterday. Why? Possibly because it rained last night, and so  
everything is still sopping wet now ???

X ♂ singing somewhere nearby 6:55 a.m. ♀ feeding on  
ground answers him by SN's. Then ♂ starts to feed too, not too close  
to the ♀.

♂ noticeably larger than ♀ in this pair

♀ utters single SN's from time to time while feeding. Especially  
just before flying a foot or so. This sometimes induces ♂ to come  
a little closer or, at least, follow her.

X's get close to Y territory again. Y's fly up, land about  
10 feet from X's. Again members of both pairs do some "redirected"



May 31 1961

(29)

After being away long time / pair birds, feeding, 7:15 a.m.  
I found them well. But even so, a while after comes close to ♀  
and begins to sing, several notes, with definite bowing. Can't  
tell if this is related or not. Commenced with CR & BF (both extreme)  
all quite silent. The ♀ does not respond in any way. ♂ does this  
repeatedly. Every once in a while, he begins to sing when he becomes sep-  
arated from the ♀. When this occurs just after he has been bowing with  
CR & BF, he tends to return the CR and BF through the singing.

Then ♀ flies to a bush a few feet away. ♂ follows immediately.  
♀ immediately goes into soliciting, just like my captive bird. He  
notes, with CR, TV, & S. ♂ perched on branch a few inches above  
her. Can see him well, but apparently with CR & BF. Does not  
attempt to mount. ♀ stops soliciting. BW's twice just as she stops.  
Both birds fly away.

Then I think a copulation occurs out of sight! ♀ re-appears  
and starts to preen vigorously. A few feet away begins to sing vigorous-  
ly. 7:55. ♂ singing definitely without CR or BF. Then both fly away  
again.

Thus ♂ hopping & bowing near ♀ is probably significantly  
reminiscent of *Prothiophorus*.



Memoranda 5

June 1, 1951  
1951

Back in same area 5:35

Z singing as usual when I go past his area. Also some other nearby birds.

Both X and Y also singing. Can't see them well (it is still not quite light yet). Y with many and early TSS. X with some SSN's and independent 'Chu's.

Incomplete Acc's do not seem to rise in pitch appreciably (wide scratch). Complete Acc's do - a little - quite abruptly in some cases - just when the Acc notes become really fast.

6:00 a.m. All observations stop because of pouring rain.

At our time, early this morning, a bird which I presumed to be X ♂ (I couldn't see him) was uttering "triplets" which I heard on May 30.

The bird I heard uttering such calls

on May 30 was quite far from the X area. Almost certainly a different bird. Such "triplets" seem to be composed of 2 different SSN's followed by a 'Chu'.

Rain stops after approximately 15 minutes.

Both X and Y pairs out, feeding birds.

A few territorial encounters. Largely "redirected" GHAC's.

Apparently both ♂'s and ♀'s can utter SSN's.

They all disappear again, and remain away for a long time.

Much later, around 7:15, I see a pair of Green Warblers in the distance. Probably the Y's. Feeding high in a tree, at least 40 feet off the ground. Much higher than I have ever seen any Atlapetes.



Memoranda, Jan. 1, 1961, II.

(31)

As far as I know, the ♀ X has shown no interest in the nest at all since the morning of Jan. 1. 2 days ago it's fitted off by me? (I think it was the ♂ X that did it). But the ♂ X is obviously nervous. It's been just as nervous as the ♂ X was last time (Jan. 1).

It's been in the nest for 20 min. singing a little. on Jan. 1 to 10 min.

Head rounded, just a little upflashed



It's been in the nest for 20 min. singing a little. on Jan. 1 to 10 min. It's been in the nest for 20 min. singing a little. on Jan. 1 to 10 min. It's been in the nest for 20 min. singing a little. on Jan. 1 to 10 min.

Head is forward! It is quite abrupt. Back in back is not exaggerated

♂ X stands with CR after uttering Chk's. Presumably alarmed by me or by a train

♂ X looks near ♀. Bowing slightly. TV (diagonal) Can't see if he has BF and/or CR. I think probably yes. Carrying leaf in bill! Utters rapid "Tut tut tut tut..." somewhat irregular in rhythm. Like Chk Notes but softer (probably even harder). ♀ doesn't respond, continues feeding. ♂ relaxes, flies off. ♀ follows. Both disappear from sight (in thicket where I think copulation occurred yesterday).

♀ X still hasn't shown any interest in old nest site 8:30. One of the Y birds utters lots of Chk's when it gets close to me. With lots of WF's & TF's, but no CR



Memoranda, I

Arrived 7 area 5 40 am Not raining, yet -  
very heavily overcast.

YF singing - moving back & forth quite  
high (8ft off ground) in tree canopy. This time it can't be made  
her. Mutual (?) song - 2 or 3 times in row, with CR  
and extreme BF. Then flies back to old perch and starts singing again.

X<sup>o</sup> also singing, after dawn. Top Gals  
With definite CR!

Then Y ♂ stands by himself, uttering "Whit Chu" notes. (Y ♀ is about 10 ft away on ground.) Then stands, uttering a few "Whit Chu" calls, not loud or steady. Every once in a while he would suddenly lift one wing (sometimes one, sometimes the other) slightly above the level of the back, spreading the wing horizontally at the same time, and quivering it a little!!!! Meanwhile, I remember it was reminiscent of the Brown-capped Bush-tanager and the Yellow-throated Bush-finch. These wing movements seemed to be partly, but not completely, synchronized with the "Whit Chu"s - especially the "Whit"s. Possibly accompanied by CR, but I can't be sure of this.

Then ♂ down to join ♀. Mutual GHR. No more.  
Then ♂ flies away again. Hops about in bush, approximately 20  
feet from ♀. Then suddenly assumes extreme BF (+CR?), lifts  
both wings out of body feathers, and lifts them slightly but definitely above  
back (this movement was not extreme - wings not spread at all).  
This wing-lifting quite silent. Then ♂ relaxes and hops away ag-  
ain.



When I saw the male singing by himself again, he was quite "normal" in his behavior. It might be purely hostile, but it is certainly a form of socializing. After a few days, he is quite a few days ago.

The first, single wing, and the second, performance may have been partly related. (The first is the only note which is significant in this connection ??)

The probably hostile double wing lift may be homologous with the similar pattern of Palm Thrashers.

I have seen him singing by himself again. Both "What" and "Aa" is. No CB. No wing movements at all. Song interrupted by quite a lot of preening. Not very loud.

I wonder if the wing lifting during the "down-songs" of the Yellow-throated Oriole is a single-wing wing lifting ???

X ♂ singing by himself, on high perch. Both "What" and "Aa" is. In exactly the same posture as the one shown on p. 31! (This posture might be called "Giffy singing posture".)

All the birds have been very dull since about 6:10. Just busy feeding. There are occasional showers now (7:00) but no down-pours yet.

X ♀ hasn't shown any interest in nest today.

♂ X singing again 8:00 a.m. No Giffy. He flies to ♀. Mutual GMA. Both birds sit about 100 yards. Then ♂ flies away, leaving ♀ soliciting (as before) on top of a stump. ♀ quickly stops, starts to feed.

Whenever the ♂ X is near the ♀, at times when soliciting is actually developing, or looks as if it will develop, the ♂ is particularly likely to utter click notes. These seem to be directed toward me, but the ♂ is particularly likely to utter such notes at such times, even when he



Memoranda, Jan 2, 1961 III

is quite far away from us — at distances at which he does not utter  
click notes in other circumstances. I think the presence of the ♀ at these  
distances raises his escape drive.

8:30 X ♂ singing again by himself. With both ♀♀  
and CR. Both "What Ah" & "U".

Will. I finally saw X emerging from the nest (I don't  
know how she got there). The outer part of the nest is almost 2/3 com-  
pleted (not covered yet).

Memoranda, I

June 3, 1961  
Figueras

Arrived usual area 5:15 a.m. Like yesterday. X ♂ appar-  
ently singing vigorously. Lots of Ah's. X ♂ apparently silent.

Then find X ♂ singing, not too close to nest — note still  
not very vigorous or steady. Usual type song. His SSN's still have  
rattle undertone (this may be a definite individual characteristic of the  
X ♂ ???). Singing in usual more or less unobstructed position. No fl-  
flff. Head rounded, but no definite CR. Disrupted by humming, animal  
with singing birds.

One unusual song by X. SSN - SSN - SSN. Acc. 4-5 vocal  
songs approximated SSN - Ah - SSN - Ah - SSN - Ah - Acc. Acc. is  
generally frequent and early. Frequently, not quite complete also.

Then ♀ X appears, 20 ft away. ♂ stops singing, flies to join  
her. Utters SN as he does so. Mutual GNAC as greeting. ♀ flutters a few  
feet. ♂ stays behind. Stands with CR (no BF). Long WF's and TF's.  
Then relaxes, begins to feed.

The fact that CR can be given without BF, although I have a



Беромунстер, Июл 3, 1961. II

35

There's no use it but that does " - In fact the talk ...  
a record of something else - I don't do it - I don't do it - 22

In all time the two birds are not out from now on.  
Differences between the two and the difference in their appearance. The two are  
apparently always mixed up. The two are always very similar,  
although often repeated. The two are apparently always a little less loud than the  
two. The two may have 'cuck' undertones. And so, I think, may some of  
all the birds.

Then the Y pair comes close to the boundary of X territory. Both X's rush over to confront the Y's. Usual type of territorial dispute. Lots of "redirected" CHAC between males. Also... One ♂ X stands in alert posture, with intense ST and slight CR. ♂ Y also stands in similar posture, with ST but no CR. Both quite silent in such postures.

✓ This behavior would certainly suggest that BF is hostile. Right on the aggressive side ?? (Both birds did BF when they were not actual ing.)

The ♀ X has shown no interest in the nest site yet today (8:00 a.m.). I am fairly sure that she has not selected another nest site, as she doesn't seem to be collecting n.m. at all.

4 (It is interesting, in this connection, that the morning has been dr. - although it rained last night.)



Both the X and Y pairs seem to have separate routes as they follow when feeding on their territories. (And they also follow their territories as feeding grounds). (Known birds go to the same place except when obviously disturbed, by neighbors and/or human intrusion). But the speed with which they pass along their routes is obviously very variable (at least on a short-term basis).

The ♀ usually hops in front of the ♂ when they are undisturbed. Presumably, due to the fact that she is less shy.

Around 8:30, the X birds stay away from the Y birds. Eventually a Y (♂?) flies up, lands about 10 feet from X's. After SN as it lands, although its mate does not seem to be present. X is immediately fly away, land about 20 ft away, in their own territory. Y then usually land & bark G-HAC as they do so. Obviously at least partly relaxed.

These birds seem to have a tendency to utter "G" HAC when they land, even when they land by themselves. Presumably the result of conditioning. In any case, the G-HAC seems to be almost on the verge of developing into a "landing call" pure & simple.

The incident described above would suggest that the SN pattern may show the same tendency.

It certainly looks as if the X birds have almost completely given up sex, at least for the time being!

X ♂ mugging in fluff posture now. This seems to be characterized as of fairly late in the morning. Why? Sign of relaxation? The fluffing may be suppressed early in the morning because the birds are almost always ready to fly at such times. (They frequently assume unritualized pre-flight postures, with WF's and TF's, between bouts of song early in the morning.)







Probably *Patellus albigularis*

Protrusion. This display involved a series of movements, accompanied by lots of "periods of display, etc."

The X birds uttered Chir Notes "repeated" HAC Notes during the dispute. (See ISN.)

Protruded "HAC" as usual

Chir Notes probably not usually accompanied by spread wings, movements or postures, except, possibly CR and/or IF

The HAC Notes, however, were usually accompanied by a "tense" posture, drawn above on the preceding page, which I shall call "BV Jiff". Slight ruffling of crown feathers. Extreme ruffling of breast & belly feathers. Breast feathers forming a conspicuous tuft, usually well separated from tuft of belly feathers. Head usually low. Bill usually, partly retracted, sometimes almost completely so (almost as in an H). At the same time, the wings were spread more or less horizontally, feet usually yellow-carpine, conspicuous. Wings sometimes, but not usually, drooped a little as well. Back feathers not ruffled, probably slightly fluffed. Tail possibly fanned?

This BV Jiff was usually assumed by a bird moving slowly toward its opponent. I.E. it is high intensity. Slightly on the aggressive side.

When the bird uttered HAC's, the bill spread & closed with each note.

The HAC's were very harsh, with a sort of rattling undertone.

The BV Jiff's were not always accompanied by HAC. Sometimes silent for a few seconds between HAC's. Possibly also sometimes accompanied by Chir Notes instead of HAC.

This BV Jiff is obviously an extreme development of a posture I got a brief glimpse of during a dispute between the X and Y pairs.



2 Nov 1944

One of the men was posted silently watching the dispute the other  
 stood a burst of vertical tail quivering. Is this a "displacement" com-  
 fort activity???

Til just again by 2.30 when I got around looking for some of the other birds in the neighborhood

I am going to get some more seeds from  
with the whole fruit & seedling and I'll do it about 7:00 a.m.

---

8-9

When I go back to look for it next, 7:15, I find the ♀ incubating again. Still on one egg. Her movements about the nest as she did before, earlier this morning. Flies into house of grass. There she begins to utter chick's. Then joined by ♂. Mutual GNAC. ♀ does not resume chick's. (Neither ♀ nor ♂ are quite as near as ever). Pair hop about in grass. More GNAC's. Then I hear soft WH notes. Copulation? Pair emerge from grass. ♀ quite fluffed underneath. Pair hop around together, ♀ once quivers tail, after hop, when perched right in front of ♂, her tail pointing into his face. Then ♀ starts to preen. ♂ goes to tree and sings.

Then, once, while the ♂ sang about 20 feet away, the ♀ interrupted her preening to utter one burst of soft GNAC, "to herself".

Then the ♀ flew to join the ♂ and they both hopped off into the brush  
C, apparently feeding, 7:30 a.m.

Observing the chb patterns this morning, I think it is obvious that they cannot be pure escape reactions. They must contain a small component of something else.



I notice that when the birds are foraging about the nest normally, that the yellow-caper are looking at the gray one. In other words, when the yellow is visible it is an indication of (aggression?)

I think that GNAC and WH Notes may be a pair — the soft GNAC notes seem to be uttered in "pairs" — GNAC probably is or intergrades with HAC. The WH Notes may be an intermediate between HAC + WH Notes.

This would suggest that the WH Notes are a bit of a slight element of hostility.

The "Chu" Notes of songs may be related to other notes in much the same way that SSN's are related to SN's. The "Chu" notes are rather like less sharp like Notes.

If so, the "Whit Chu" songs of this species are probably also homologous with some of the vocal performances of Black-capped Saltators (and probably many other species).

If a copulation did occur in the grass earlier this morning, it occurred in almost exactly the same place where I thought a copulation occurred a few days ago.

Everything very quiet now, 8:00 a.m.

Flashed x q off nest again 8:20. 2 eggs in nest now! q flees silently, joined by ♂, both GNAC, both disappear.

The ♂ x seems to be swinging less today than on previous days. Even when the q is not with him.

Y ♂ has also been relatively silent this morning. Has the Y ♂ laid eggs also?

If so, it is interesting that both these pairs (and my captive pair of Orange-billed Sparrows — see today's notes on Ammonia) have laid



♀ off at almost instant distance

♀ off to the right and back to the left

Obs. 10:20

Jan 6, 1961  
C. J. Jones

Watch 1-4 over 5:45 am. Both X and Y 2 singing vigorously. Lots of Acc's. Then both shut up. Absolutely nothing to 6:05

X birds move off feeding together on RR tracks a little down the Cove. Yes! When I flash them, they separate. ♂ goes to usual perch in park to sing. ♀ perches in another bush. Utters SN's and Chk Notes, apparently as response to ♂ song (she may also be nervous about my presence — but she doesn't usually utter Chk's when the ♂ is near).

The birds go back together to feed. Then a few minutes later (6:30) ♂ back singing. Insects (same type as a few days ago).

Watching X birds feed for a long time. Always close together. No GHAC's as long as they feed, even when one bird becomes slightly separated (about 1 ft away) from the other and then they reform one another.

Eventually separate more widely. ♂ goes to sing in tree. ♀ remains behind and preens. Then, when she has finished preening, she continues to sit but begins to utter a lot of Chk Notes. This seems to "call in" the ♂! After a few seconds he flies to perch beside her. Both GHAC. Then start to hop about, more or less together. Not very rapidly. Possibly feeding part of the time. Silent, except for a few GHAC's. A large part of the time the ♀ is in a very fluffed posture. Lots of BF. Slight CR. Wings slightly drooped, with primaries spread a little.



Ammonops, Jan 17

50

Head retracted on shoulders (When the ♂ was to fly off with CR and BF, his head was not retracted) - H! Tail fanned



CR probably only once - time then flies

About all the time is in this posture

Angle of body & tail somewhat variable. Sometimes more nearly vertical than this.

Once, during this behavior, when the ♂ had become separated from the ♀, by about 3 ft, he flew straight at her. Purpose? She was hidden by grass, so I couldn't see the next incidents. But there was no mutual GHAC. And no time for copulation.

I think I have seen the ♀ X assume the "H" (Huff) posture, with drooping wings, before, when she was near the ♂ (I think I do all call this posture the "H-Hff").

Y pair feeding quite high. In tops of 20 ft. trees. GHAC's when they come together. One of them also utters GHAC when it lands by itself (at least 20 ft from its mate!)

I suddenly look up, to find ♀ X sitting in H-Hff on stump. Starts to utter click notes (probably because she sees my movement). This brings ♂ just back from a considerable distance away. Mutual GHAC.

The ♀ definitely remained in H-Hff Posture while she uttered the Click Notes during this incident.



June 17, 1961, III

(43)

Two with 1 in the nest in the afternoon for a while  
Ran to the 5th E. on 17th, 7:30

to sing at 7:30. I think the birds are not always so  
much. It seems to me that the birds are not always so  
but not significant

I think the birds may be somewhat nervous in the  
nest. The "CR" of this species are probably never more extreme  
than the CR with the 4-10 posture drawn above. Probably not usually  
is "peaked". This species does not have a "real" crest like the Evening  
Capped Sparrow.

When the 3 & 4 were moving around together earlier this  
morning, I saw one of the birds perform a rapid vertical tail-  
quivering several times. Not connected with anything very interesting in par-  
ticular. I think this pattern must be strictly comparable with such pattern  
as the "tail-bobbing" of Turdus and some Tyrannidae. A locomot-  
ory "intention movement".

Leaving, in pouring rain, 7:40 a.m.

Amurhops, I

June 8, 1961  
Frijoles

Amurhops X-Y area 3:40 X and Y ♂'s singing

A beautiful clear morning, after very heavy rains throughout  
most of yesterday

Checked the X nest. It looks rather deserted now. No eggs  
in it. 5:50 X ♂ has shut up, and I can't find the birds now. Ah yes,  
the ♂ feeding alone in field. Then flies to stump and starts to sing again



Ammonops, Jan 2 1971

55

Now 6:00, both X's feeding together.

I just saw the ♂ chase a fly or other insect.  
typical flycatching flight!!

♂ & ♀ X continue feeding long time. Soon after the ♂ leaves the ♀, to go to a tree and sing. Note of the ♀ whenever he rejoins the ♀. Once the ♀ is in the tree, the ♂ sings. Once the ♀ starts to call, the ♂ doesn't carry it away where. Once the ♀ utters a call when the ♂ is in the tree, after a short flight, while the ♂ sang. The X pair form a definite circle, sort of a rough circle, which they usually follow when feeding on the ground.

Then ♂ & ♀ X fly to tree. Hop around together. Do vertical tail quivering almost any time they land near one another. A bird landing near the other does not always orient itself so that its tail is pointing towards the other when it performs vertical tail quivering. (I shall call this pattern VTB.) Then the 2 birds begin to preen vigorously and perform other court activities. During these court activities they perform lots of vertical tail quivering which is quite like the VTB in form. Usually when they show one the wings.

It seems likely, therefore, that VTB has been derived from court activities. It is possible, in fact, that the VTB, as performed after landing, is still nothing more than an int. mov. of court activities. I rather doubt it, however. VTB's seem to be too closely correlated with the ♂ & ♀ moving around close together.

A bird hopping on the ground feeding by itself certainly does not perform VTB on landing.

I think the ♀ X tends to perform much more VTB than the ♂, but I am not sure about this.







Ammonops, I

Jan 1961  
D. J. P. L. S.

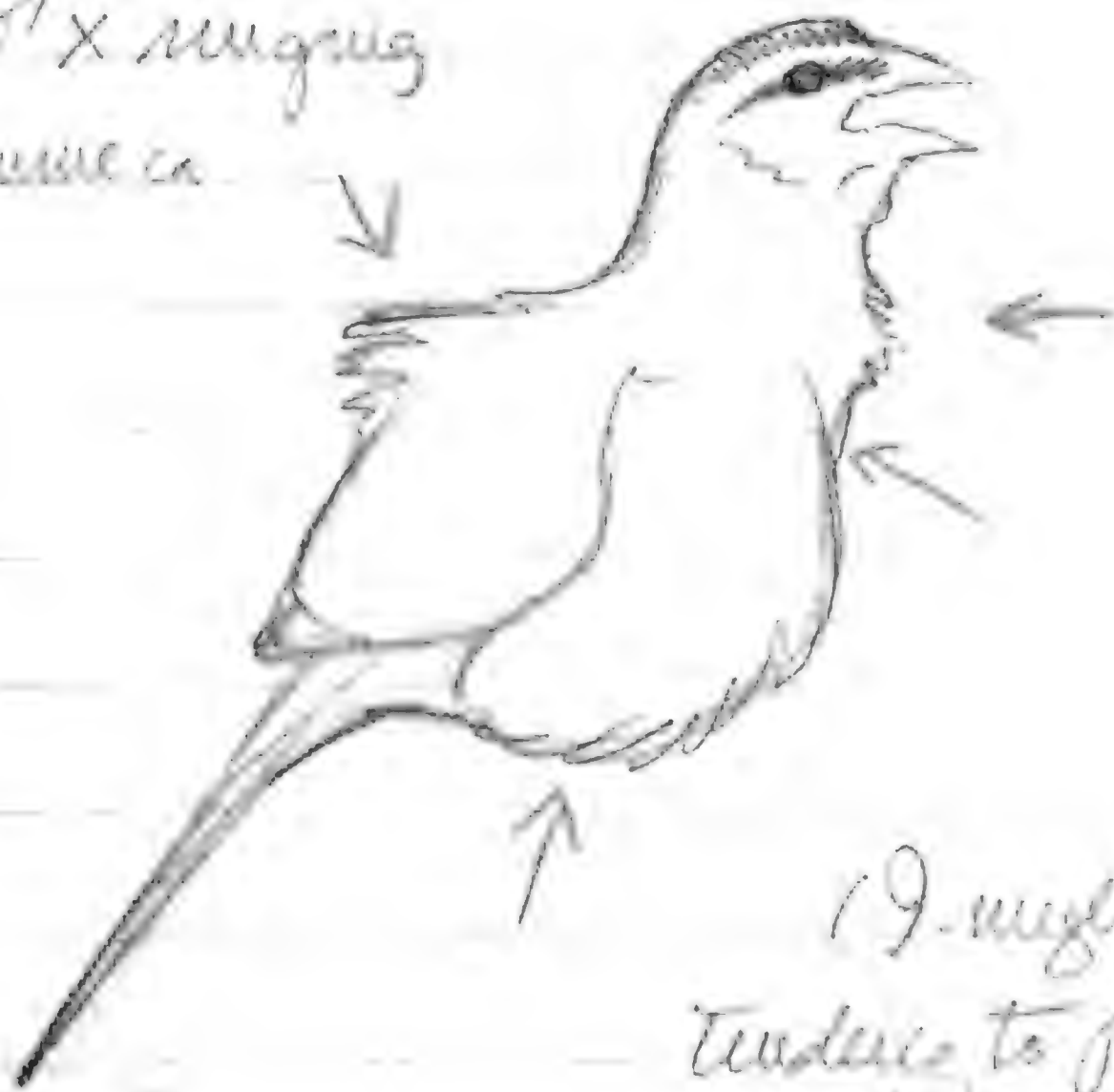
Back to Y-Y area 5:45

X ♂ singing vigorously usual no sign of ♀ yet - 5:55  
Still 6:05.

No doubt but that there is a lot of or never CR during singing  
I think that there is usually some EF, however this is what makes singing  
♂'s look so round-bodied

Still no ♀ X by 6:15. ♂ X still singing

♂ X singing  
in posture common in



to back fluffing  
is probably also a  
derivative of the song posture  
of this species

(I might add that the X ♂ showed no  
tendency to preen between songs in this post  
ure.)

♂ stopped singing 6:20. Goes to join ♀? I can't see him now  
Back again almost immediately. Still no ♀. ♂ singing again immediately.  
No egg present 6:30. But ♂ flies away and disappears when  
I check the nest. Now singing back in tree 6:33. (I think these little excu-  
sions must be feeding trips. I never hear GHAC's while ♂ is away this morn-







Ammodramops, Jan 11, 1961

28



Wings not rising  
this high

Then the feeding bird disappears for a while. Bird on ground later later 6:05. Feeds energetically, sitters. It GNAC's and then after a short flight. Also occasional SN's. The ♂ on tree, stops singing when this bird reappears, but does not join it on ground. Still the feeding bird stops feeding to perform collecting & as before still no response from ♂.

This collecting & is all either silent or accompanied by a call too weak for me to hear.

Then the feeding bird (which I shall call just plain "♀" from now on) disappears again. ♂ does not resume singing. Jawsed bird?

♂ back singing again within a few seconds. I see him fly in so he was with ♀. Hidden as usual!

♀ back in a few minutes. ♂ stops singing. ♀ hops along ground, uttering GNAC's by herself each time she lands after a short flight or energetic series of hops. Then ♀ starts up tree in which ♂ has been singing. Some time, around this time, the ♂ flies off to another tree and starts to sing there. ♀ continues up old tree, finally perches, sits, utters a lot of Chk notes, apparently in answer to the ♂'s song. Then flies



to join ♂. 6:30

♂ was moving on the ground and hopping up the tree. He frequently paused briefly to peck from bird seed pressing his beak into the seed. VTG

One male was also seen to sit briefly in H. Off Post (this may be an intention movement of soliciting.)

There is 25. ♂ & ♀ still apparently feeding together. I can't see them but ♂ has stopped singing.

One bird ♀, back, feeding on ground in distance. No, I see the ♂. Back to tree, singing.

Then ♂ lands with ♀. He is in same tree as ♂, but not close to him. ♂ stops singing. But doesn't join her. ♀ immediately starts soliciting. In posture like the soliciting posture of my captive birds (this is presumably the typical posture of birds soliciting, while perched on a branch). Her bill is open. Presumably uttering WH Notes. Then ♀ flies down to ground, to feed as before. Disappears from sight. Back again 6:40. Behaving as before. G.H.N.C.'s and soliciting by herself. ♂ still silent (and I can't see him - but he isn't close to the ♀). Then ♀ disappears again.

It is interesting that the ♀ never approaches the ♂ very closely while she solicits !!!

All her G.H.N.C.'s by herself are the "Whoosh whoosh..." type. Sometimes even "Whoosh-whoosh..." type.

When a train comes, the ♂ flies away across the track. ♀ remains behind. She utters quite a lot of SN's (fairly long intervals between notes) and then flies after ♂.

♂ back singing. ♀ comes back some minutes later. Lands with



Amurzeops, Jun 11, 1973

25

GHAC, in same tree as ♂ but some distance away  
was to utter Chk Notes. ♀ was on ♂'s tree about 7.15  
later later, the ♂ begins to sing again.

Everything very dull now, 17.25. Both birds drop out.  
Then ♂ back. ♀ begins to sing. ♂ begins to sing. ♂ begins to sing.  
♂ is perched. ♂ stops singing immediately. ♀ utters GHAC and Chk Notes.  
Then begins to utter "reluctant" S. Long. but not much. ♂ flies away to another tree.  
♀ stops S. begins to feed.

It is beginning to look as if some sort of the S system of this morning is apparent - not strictly sexual!!!

All gone and quiet again 17.45.

Listening to Y♂ singing in distance. The SSN's are like rattle undertone. I think that SSN's are probably the "rattle" notes which have rattle undertones most frequently.

Then watching ♀ x sitting by herself doing a lot of preening and other comfort activities. During this period of comfort activities she also utters 10 or 12 bursts of GHAC. Left as usual. Since then bursts of GHAC appeared to be provoked by the approach of birds of other species (once a streaked saltator, once a yellow-bellied seedeater). The ♀ Green-backed made no attempt to approach the birds of other species when she uttered these GHAC's. Just went on with her comfort activities. (In fact, these GHAC's looked almost as if they could be appeasement too.) The other bursts of GHAC's appeared to be "spontaneous" sometimes, but not always, uttered when the ♀ was "shaking out" her wings. (Is there some sort of "link" between GHAC - Wh type notes and rapid wing movements ??? The shaking out movements are rather like S in form.)

Once the ♀ interrupted her comfort activities to perform pre-lunge



51

*[Faint handwritten text]*

10-1-10

11/11/11



—

♀ returns to clump where old nest is. She also did this a few times yesterday. Don't tell me this is the old ♀? ♂ doesn't sing when she leaves. Perhaps he never joins her.

Yes! Both back on so. found in tree with mutual GNAC ♀ goes to ground to feed. At various in tree and sings

♀ is behaving much as yesterday, except that she is doing little or no Q! Why? Is she sexually satisfied? Or is it just that



Memoranda, June 12, 1951, =

she is less afraid of the ♂ now?

The ♂ also seems to be doing less singing than yesterday. Even when the ♀ is not close by.

She is certainly the same ♀ as yesterday (one primary is slightly disarranged in a distinctive way)

♀ flew back to old nest site. ♂ joins her. And I saw sight of both of them - unusual

X pair engaged in dispute with another pair, not 7 at one edge of their territory (I shall call this new pair "M") "Reducted" GNAC by birds of both pairs.)

The X ♂ & ♀ are certainly staying together much more than yesterday. The ♂ seems to join the ♀ with little or no hesitation today.

Birds generally very dull today 6:35 X birds seem to be spending most of their time feeding together, out of sight. So far, the ♀ has shown no signs of n.b. I have heard relatively little GNAC this morning, so I don't think the X's can be doing very much of it. Now I see two feeding together. A little GNAC at first. Soft. Then silent as they continue feeding. After feeding for a while, the ♂ flies up into a tree. Sings, then starts comfort activities. A few minutes later, ♀ goes up into another tree, 40 feet away, utters 1 SN, then does comfort activities herself 6:50. Then ♂ flies away, ♀ follows.

♂ & ♀ in tree. Perching. Not close together. ♀ hops up toward ♂. One or both birds utter(s) GNAC. ♀ begins soliciting ♂. A. before sitting at all, making no attempt to approach ♂ while she is. ♂ starts to hop toward her, then flies away. ♀ stops ♂, does BW.

♂ & ♀ X on ground. ♂ flies to tree. ♀ stays behind. Stands in more or less extreme H-Off. Then supplants Volatuna. Then stands again in H-Off.



Quincy, Mass. Jan 12, 1861. III



forming a structure of  $\text{Fe}_2\text{O}_3$  &  $\text{Fe}_3\text{O}_4$  coming from the same source. I observed  
at various places in the (1-5) position. No  $\text{Fe}$  from the top. It is away  
the water and the way back to the ground.



My record of 8.4 was the  
very nearest to it

Leading 8. 0000

Albuquerque, I

June 14, 1961  
Frijoles

Am 18. X. 1900 2. 113. 2. 115. 7. 116. 117.

♀ shows up & ♂ starts singing, ♀ feeds ♂ does not, I think, join her. Then ♀ flies away then ♂ does join ♀, where I can't see them. Then ♂ flies to tree, sings, while ♀ continues to feed. ♂'s song while ♀ is away has singing tree is SSN - SSN - SSN - Clee - SSN - SSN - SSN - SSN - Clee - SSN - Clee - SSN - SSN. Acc's begin when ♀ moves further away.

♀ utters a few soft GAA notes when feeding by herself, but relatively very few. Many fewer than on previous days.

I suddenly see a long, silent, aerial chase. Involving a Green-back  
I don't know if they are the X birds or not







Arremonops Jan 14, 1961, III

33

White throat +  
chest also are  
grosser in tone



Common song picture

Feeding - not always present, but  
is characteristic

Structures (if correct) breast & belly  
much more fluffed  
will not spread

June 17, 1961  
Tucson

Arremonops =

Arremonops area 5:45 ♀ uttering Chk Notes in brushy area. Then  
♂ starts to sing, ♀ shuts up.

♂ flies to join ♀. Both hidden by shrubs. Mutual CHAC. ♂  
back in a few minutes. Sings again. ♀ utters SN's and soft CHAC notes  
after ♂ leaves. On ground 6:00 a.m.

Then ♂ joins ♀ again. Then back to perch singing again. ♀ hops  
along ground, feeding. Utters quite a lot of SN's and CHAC Notes. Tends to  
give SN's just before taking a long hop or flying up on a stump, and to give  
CHAC's on landing after long jump or short flight.

♀ eventually hops up into tree where ♂ has been singing. ♂ stops  
song. ♀ utters CHAC as she gets near ♂. ♂ immediately flies off and  
naps in another tree.

♂ & ♀ feeding together 6:30. Then ♀ starts to peck at n.m. Suddenly  
starts to wrattle with enormous strand of n.m. Utters lots of Chk Notes, +  
series of "Tuk" Notes, when wrattling particularly vigorously. "Tuk"s app-  
eared to be nothing but accelerated high intensity Chk's (although both types



Memoranda, June 7, 1961

es of notes were quite typical). Then ♀ flies to nest site with ♂ (far away from the old nest). Ident as before so ♂ is in the nest & ♀ back in nest. Collecting more n.m. silent. ♂ continues to sing.

Then continues for a while. Then ♂ down to feed, while ♀ remains in tree. ♂ silent, ♀ utters quite a lot of Chk Notes. 6:40 Then ♀ silent & continues to feed. Finally ♂ flies up to ♀. Mutual CHAC ♀ does something & ♂ flies away! ♀ immediately starts to preen. ♂ goes back to feeding, while ♀ remains behind in tree. Both silent. ♂ finally moves out of sight. ♀ goes too 6:55

I finally find the birds, feeding peacefully together in a tree. Then ♂ back to tree, preening silently. ♀ starts collecting n.m. Again utters a burst of many Chk Notes, developing into "Juk" Notes, when wrestling with the unmanageably large piece of n.m.

Well! Now I am baffled! Bird which had been wrestling with n.m. incident described immediately above begins to utter SSN. The song Bird preening in tree answers by Chk Notes.

— Then bird which uttered SSN-Chu's also begins to utter Chk's 7:30

This means either that the ♀ can utter SSN-Chu songs or that it was the ♂ wrestling with n.m. I think probably the latter (remember his behavior when he had the other ♀!).

Then 2 birds go to nest site together. Disappear from view. Back, BU-ing furiously. Then disappear again. ♂ back singing, 7:50.

Then ♀ back, on ground, collecting n.m. ♂ flies to join her. Mutual CHAC ♀ continues collecting n.m. ♂ hops about with slight TV. Both also appear. Then I hear long bursts of "Juk" Notes from the direction in which the birds disappeared.



♂ (?) back after typ. in 30 sec's when fed and chased by pair of *V. n. n. n.*

♀ back to after 5 or 6 typical Chk notes when waiting in the long way

Leaving 2:30

Alouatta, I

June 16, 1961  
Fogless

11:00 - 11:15 AM ♂ singing  
♀ arrives 5:30. ♂ stops singing. Both (birds) can't see.  
♂ resumes singing again & then utters a lot of Chk notes (from some distance away) while the ♂ continues to sing.

It would certainly appear that the ♀ uses Chk notes to "call in" the ♂!!

The ♂ continues to sing after ♀ stops Chk's and falls about 100 yds. What does type song. But some of the first notes of doublets seem to be real SN's, not SSN's. Also uttering some triplets.

The ♂ flies away, disappears for long time. Presumably feeding with the ♀. 6:30

It has been noticeable, both today and yesterday, that the birds' "disappear" for much longer periods than before. Both silent for long periods. I.E. displays are decreasing, now that the pair bonds are strong.

♂ back singing again 6:30. Largely SSN-Chr's. Relatively few Acc's. Although he is singing steadily, I think so many of these songs must be "incomplete" because the ♀ is near by. (I can't see her, but I think she is behind us at the same site as yesterday.)



Ammonops, Jan 18 1957

♀ flies into the nest to ♂ ♂ forms her throat. ♂ does a lot of VTO. Then both down to feed. Large silent around trace of GHAC. Then ♀ starts to pick it up. First small in very large & long twigs and large bad leaves. At this time, I notice that she has intense CR, and wing-drooping. Keep nearly quivering. But this may have been due to the effect of jumping with the large in.



Sometimes the curves she tried to pick up were even larger than the one shown here.

♂ also starts to pick up in without CR or wing-drooping. Then flies up to tree, dropping in. Begins to sing again 6:45.

Both birds quite silent throughout this in. collecting.

Copulation! In tree, at least 30 feet off ground. Both birds had been at nest site. Then one (♀?) back, silent, quit sitting. Then the other bird (♂?) back, landing in same tree as first bird, but at least 20 feet away. This second bird hops rapidly toward the first. GHAC when it gets close to the first. This GHAC sounded as if it were uttered by only 1 bird. Unfortunately my view was obscured by leaves. But the cop occurred just as well as the 2 birds got together. Little or nothing in the way of preliminary dis-



Chlorophanes Jan 18, 1961, III.

(39)

play except for the call. The ♀ then saw a green collecting ♂ just before the ♂ mounted. She continued collecting ♂ after he mounted, before the cop really got going. Cop apparently, unusual. ♂ then flew straight off ♀ going at least 10 ft away, then landing on branch. ♀ continues collecting ♂ for some moments after ♂ flew off. Then she leaves site of SW, a few other cons. just afterwards. The ♂ also does several BW's as soon as he lands 7:15.

It is interesting that the ♂ did no dancing or preening with "Tide" before mounting during this performance. It looks as if the pair is very well adjusted.

Both birds disappear again 7:20

♂ back in tree, 7:40 jumping. He hops up when ♀ appears, feeding on ground below him. Hops along a branch in her general direction. Then just freezes, in semi-crouched H Posture, with extreme BF, wings not drooped. I don't know if he has CR or not. Then flies into next tree, even nearer the ♀. Hides by leaves. ♀ eventually flies up into same tree as ♂, but does not go near him. She sits in extreme H Off Posture. Wings drooped. Combined with a lot of VTQ's. One general shake. Followed series of Click Notes. Then hops to another perch. Continues as before. This time I noticed that her wings are Q'd, briefly, in small bursts. Movement slight. Markedly discontinuous. While wings continued to be drooped. It is possible that the wings were fluted outward briefly during each brief burst of slight Q, but they were never raised. I shall call this brief slight intermittent Q "NQ". It was quite evident that these NQ patterns were exactly the same movements that the ♀ made earlier when collecting n.m. on ground!

The ♀ continued Click Notes and H Off all the time she did NQ's. Also (probably) VTQ's. I think that the VTQ's were at least partly synchronous with NQ's, but some NQ's certainly occurred without VTQ's.



Ammonops, Jan 18, 74 IV

Then both birds fly down to ground. Feeding. ♂ begins to peck at n.m. ♂ suddenly flies toward ♀, carrying n.m. uttering c or 7 Chk Notes. Then reverses. Starts to hop up the wing n.m. silent. A little bowing and pivoting. Extreme CR and then drops n.m. A clares 7:50

I wonder if there something with n.m. pattern could be a substitute for sex, when sex can't develop properly for some reason(s)?

Now ♂ carrying n.m. in his beak & preening in another tree occasionally utters SN's. Also one lowest GHAC 8:15.

Then both birds go feed

Things very dull now 8:30

♂ back singing. ♀ back in another tree carrying n.m. Slight trace of H-JFF. Head quite horizontal, neck stretched upward more than usual in H-JFF posture. Wings drooped. In this posture she does Q. Prol Q, continues to extreme - although the wings are kept down throughout, not raised at all. Then stops Q, does extreme VTO. During both Q and VTO, she utters Chk Notes, still with n.m. in bill. Then flies to another tree, still carrying n.m. ♂ follows. Both land on same branch. ♂ starts to approach ♀, uttering GHAC as he does so. ♀ immediately hops n.m., begins selecting Q, in real selecting Q posture (bill straight up, neck also stretched up, relatively slight TV). Then ♂ flies away. ♀ stops selecting Q, immediately does general shake, and then BW's. 8:45.

Good heavens! The ♀ is now busily carrying n.m., repeatedly, to a site completely different from the one to which she carried n.m. earlier today and yesterday!!! Uttering Chk's and an occasional SN as she does so. ♂ singing some distance away.

This is obviously "real" n.b. The ♀ is making trip after trip, n.m.



A more rapidly than in the previous days.

Just as the male of the other side and the female, so that the female is not in the same position.

7:00 - 7:30 am. The male is still building. The female is still singing.

At 7:30 am the male is on the top of a group of reeds, over a head saying the same over the site to which the birds came in an area of grass at least 30 ft. away. I shall call this new site 'site B', and the earlier site 'site A'.

The male stops singing. He utters a series of 'Tide' Notes & utters a 'Chk' Note and flies half way to him. Lands in the same place. Selects with extreme CR. Then down to ground, where the male is. GHA by one or both birds. The male drops off (in direction site A). The female attracts him, carries it to site B.

Leaving 9:15.

Ammonops, I

June 17, 1961  
Tajikistan

Ammonops area 5:15 am. ♂ singing. Singing posture with neck more elongated, and swollen. This is probably the usual high intensity posture.

Looking quite well bedded





Annals, June 17, 1955

Still no ♀, 6:05. ♂ is incubating, singing

Now ♂ singing  
in posture common in



singing posture

♀ shows up (I can hear her) 6:10. Uttering GHAC & in →  
continues to sing in tree.



(CR + BF + TV  
(tail also fanned?))

♂ suddenly flies to ground. Hops in alert posture with CR,  
BF and slight TV. ♀ lands in nearby bush. Jumps up and utters Chik Notes.  
♂ begins to feed normally. ♀ flies down to join him. Uttering GHAC as she  
does so. Both feed normally.

Continue to feed a long time. One or both utters an occasional GHAC  
and/or a series of Chik Notes. Then ♂ flies back to tree. Jumps. Then utters a ser



August 7, 1963 III

[illegible]

There is no doubt but that solitary S patterns are performed much more rarely now than during the pair-formation stage of the breeding cycle.

♂'s tail is jerked forward during all "Chir" (and Ace) notes,  
but not during the end of song.

♀ still gone 6:40. ♂ giving only very low-intensity song now.  
Almost all SSN's and SSN-Chn's left.

♀ back 6:45. In tree. Utters Chirp Notes. ♂ stops song. Utters Chirp Notes too. Goes to join ♀. Mutual G-HC. Apparently no cop attempt. Both birds down to feed. ♂ back to tree. Song. ♀ disappears. No! I can see her in another tree, preening.

Then I flew to another tree. ♀ follows. Mutual CHAC as they fly, but I don't think they landed together. Last from sight in leaves. Gone a long time. 6:58.

↗ back (from direction A etc). Jumps triplets. Sometimes SN-SSN-Clu SN-SSN-Clu SN-SSN-Clu .... Pieces briefly from time to time.



Ammonops, June 19, 1961: IV

U

♀ back 7:05. Runs to same tree as ♂. Utters GNC as she climbs. Hops up toward ♂. ♂ stops singing. ♀ does constant Bw singing between hops. Also 1 or 2 wing movements. Silent. Then flies to another tree, and jumps there, uttering occasional SN notes. Then joins ♂. Mutual GNC. Both hop down to ground. Out of sight.

Wing and tail movements during general shakings seem to be identical with ♂ and ♀ (except that ♂ does wing and tail movements during general shakings, as they are during solo singing).

Shaking over till 7:25

♂ back, singing 7:30. ♀ appears

Leaving myself 7:35

Ammonops, I

June 20, 1961  
Singles

Back X area 5:45. ♂ probably singing, but not in one of his usual spots. Then shuts up. Then singing in favorite spot, 6:35. Some of his "Mint Ahu"s are really

But others are more conventional

Then ♂ flies to another tree. Crowses slightly, with BF. Presumably flies down to ground, to join ♀. No GNC! (Can't see birds on ground. Cop attempt?).

♀ builds at site B. Utters Chk notes, at night, when she has trouble



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*Alcedo coruscans* - June-July 20, 1961

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*Arremonops canescens*

New York, 1961

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*Arremonops canescens*

From Jan 20, 1961

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## *Arremonops canescens*

Thru Jan 20, 1961

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